Patent claims

546 a 1. Nucleic acid encoding a polypeptide with the bioactivity of the ultraspiracle protein, comprising a sequence selected from

(a) the sequence of SEQ ID NO: 1,

(b) sequences which have at least 85% identity with the sequence of SEQ ID NO: 1 over a length of at least 600 consecutive nucleotides,

(c) sequences which, owing to the degeneracy of the genetic code, encode the same amino acid sequence as the sequences defined under (a) and (b),

(d) parts of the sequences as defined under (a), (b) and (c) which encode polypeptides which have essentially the same bioactivity as a polypeptide with the amino acid sequence of SEQ ID NO: 2.

2. Vector comprising at least one nucleic acid according to Claim 1.

3. Vector according to Claim 2, characterized in that the nucleic acid molecule is linked functionally to regulatory sequences which ensure the expression of the nucleic acid in pro- or eukaryotic cells.

4. Host cell containing a nucleic acid according to Claim 1 or a vector according to Claim 2 or 3.

5. Host cell according to Claim 4, characterized in that it is a pro- or eukaryotic cell.

6. Host cell according to Claim 5, characterized in that the prokaryotic cell is E. coli.

7. Host cell according to Claim 5, characterized in that the eukaryotic cell is a yeast cell, mammalian cell, insect cell or plant cell.

8. Transgenic organism, with the exception of humans, containing a nucleic acid according to Claim 1 or a vector according to Claim 2 or 3.

9. Polypeptide which is encoded by a nucleic acid according to Claim 1.

10. Receptor comprising an EcR subunit and a polypeptide according to Claim 9.

11. Antibody which binds specifically to a polypeptide according to Claim 9.

12. Process for the preparation of a polypeptide according to Claim 9, comprising the following steps:

(a) culturing a host cell according to one of Claims 4 to 7 under conditions which ensure the expression of the nucleic acid according to Claim 1, and

(b) obtaining the polypeptide from the cells or the culture medium.

13. Process for the preparation of a nucleic acid according to Claim 1, comprising the following steps:

(a) complete chemical synthesis in a manner known per se or

(b) chemically synthesizing oligonucleotides, labelling the oligonucleotides, hybridizing the oligonucleotides with DNA of an

insect cDNA library, selecting positive clones and isolating the hybridizing DNA from positive clones, or

(c) chemical synthesis of oligonucleotides and amplification of the target DNA by means of PCR.

14. Regulatory region which naturally controls the transcription of a nucleic acid according to Claim 1 in insect cells and which ensures specific expression.

15. Method of finding new active compounds for crop protection, in particular compounds which cause the activation or inhibition of a polypeptide according to Claim 9 or a receptor according to Claim 10, comprising the following steps:

(a) providing a host cell according to one of Claims 4 to 7,

(b) culturing the host cell in the presence of a chemical or a mixture of chemicals, and

(c) detecting the activation or inhibition of the polypeptide or receptor.

16. Method of finding a compound which binds to a polypeptide according to Claim 9, comprising the following steps:

(a) contacting a polypeptide according to Claim 9 with a compound or a mixture of compounds under conditions which permit the interaction of the compound(s) with the polypeptide, and

(b) identifying the compound which binds specifically to the polypeptide.

17. Method for inducibly expressing target genes by means of a polypeptide according to Claim 9, comprising the following steps:

(a) culturing a host cell according to one of Claims 4 to 7 or providing a transgenic organism according to Claim 8 under conditions which ensure the expression of the nucleic acid according to Claim 1, where the host cell or the transgenic organism contains a target gene with suitable regulatory sequences, and

(b) contacting the host cell or the transgenic organism with a chemical which induces the expression of the target gene.

18. Use of at least one nucleic acid according to Claim 1, of a vector according to Claim 2 or 3, of a host cell according to one of Claims 4 to 7, of a transgenic organism according to Claim 8, of a polypeptide according to Claim 9, of a receptor according to Claim 10 or of a regulatory region according to Claim 14 for finding new active compounds for crop protection.

19. Use of at least one nucleic acid according to Claim 1, of a vector according to Claim 2 or 3, of a host cell according to one of Claims 4 to 7, of a transgenic organism according to Claim 8, of a polypeptide according to Claim 9, of a receptor according to Claim 10, of a regulatory region according to Claim 14 or of a method according to Claim 17 for the directed modification of the biological properties of a host cell or a host organism.

add a^{57}